Spring 2014

The Quarterly Hail

National Weather Service - Hastings, Nebraska

Volume 4, Issue 1

Notes From the Meteorologist In Charge

This winter began as if we were visiting a weather theme park. We have ridden on the “Temperature Roller Coaster” and experienced the bone chilling thrills of the “Mighty Wind Machine”! Unfortunately, we have been standing in line for the “Precipitation Log Flume” for quite a while, only those to our east have gotten to take a joy ride on it.

Well, there is still plenty of winter yet to survive, so keep your hats on. Stay buckled in and enjoy the rest of the roller coaster ride we call winter.

In any case, within a few months, we will be in the heart of thunderstorm season. There is no better time to be getting prepared for the potential severe weather in the forms of hail, lightning and wind damage. Here at the weather office, our folks are already beginning to prepare for spring severe weather. For you, please make an effort to attend our annual spotter training course that will be offered in almost every county this year. Monitor our website for the latest on severe weather spotter courses that will be offered between late February and early April. If you have not been to a course for a few years, please make an effort to get refresher training. It’s an awesome opportunity for you to interact with the great people that work for you here at the Hastings NWS office.

Administratively, we are so very thankful that Congress has passed an appropriations bill and for the first time in years, we have a budget in hand that will allow us to perform outreach activities, get needed training, share new science ideas with our peers, replace aging equipment and pay to have the lawn mowed. This is great news for our customers who can again expect the best products and services we can provide.

In a matter of time spring will arrive. When it does, we hope you get out and enjoy the warmer weather, but please always be vigilant in monitoring the weather for your safety and the safety of your loved ones.

Steve Eddy
Meteorologist In Charge, National Weather Service Hastings, Nebraska
Steven.eddy@noaa.gov
402-462-2127 x642

Inside this issue:

Special Points of Interest:

- *Do you know what a sun pillar is?*
- *Learn about March, a month of transition.*
- *Are you prepared for Severe Weather?*
- *What are the warmest temperatures on record for the spring season?*

Product Highlight - Hourly Weather Graph

Remember that the National Weather Service issues other daily products outside of the normal 7 day forecast! In fact, we offer a variety of products each day that can help you make your weather driven decisions. We will try to point out a few different products that might make your life a bit easier. We will tell you where to find them and what they can do for you. Check it out!

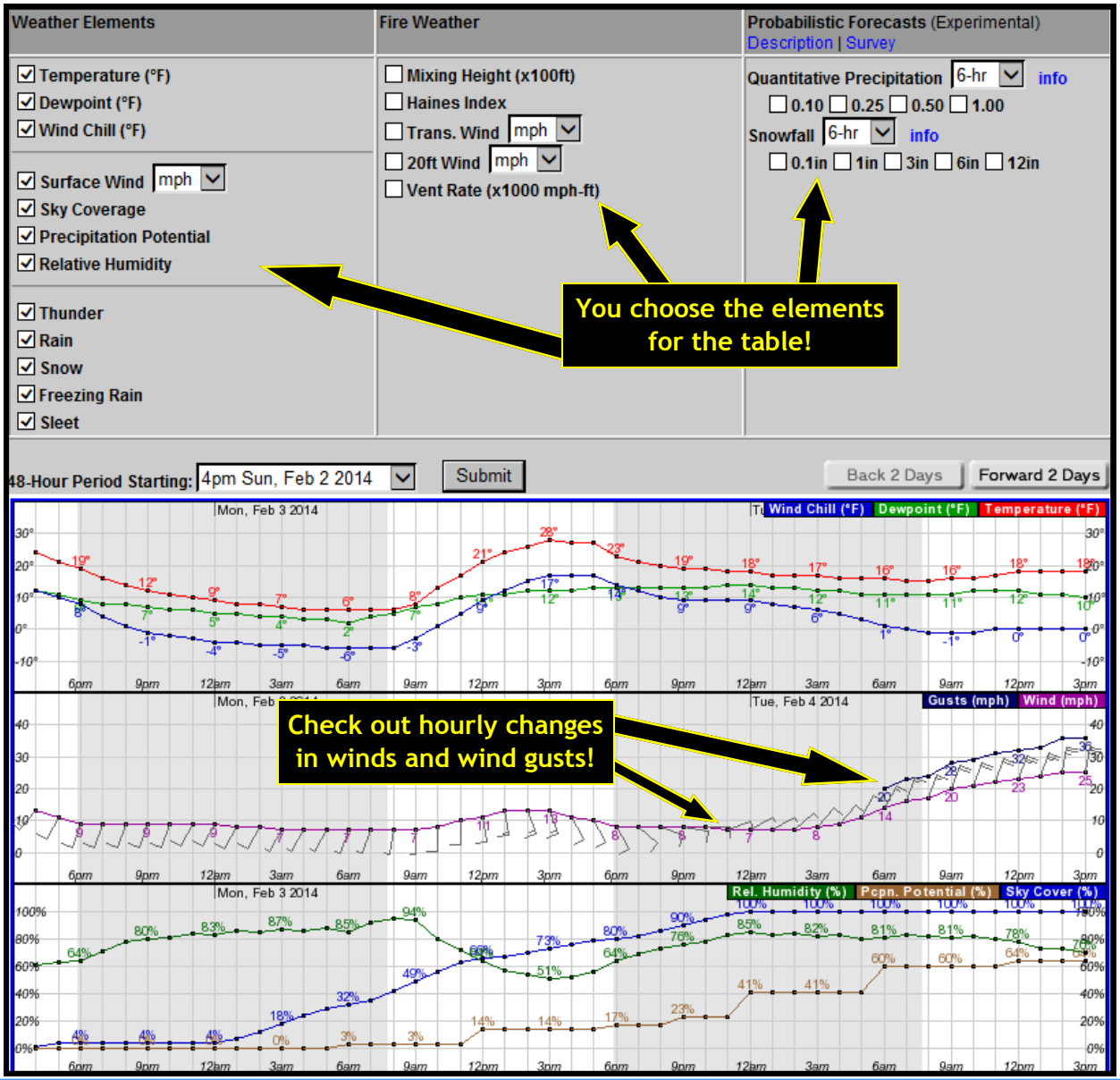
What: Hourly Weather Graph

How to find it: Navigate to our website: www.weather.gov/hastings. Click on the location of interest. Scroll down below the 7-day forecast, and on the right-hand side you will see the text "HOURLY WEATHER GRAPH". Click on the graphic below that text.

Information it provides: This graphic will show a hour by hour breakdown of a number of weather elements, including anything from basic temperature to fire weather parameters such as mixing height. **You** have the option to choose as few or as many different weather elements you like.

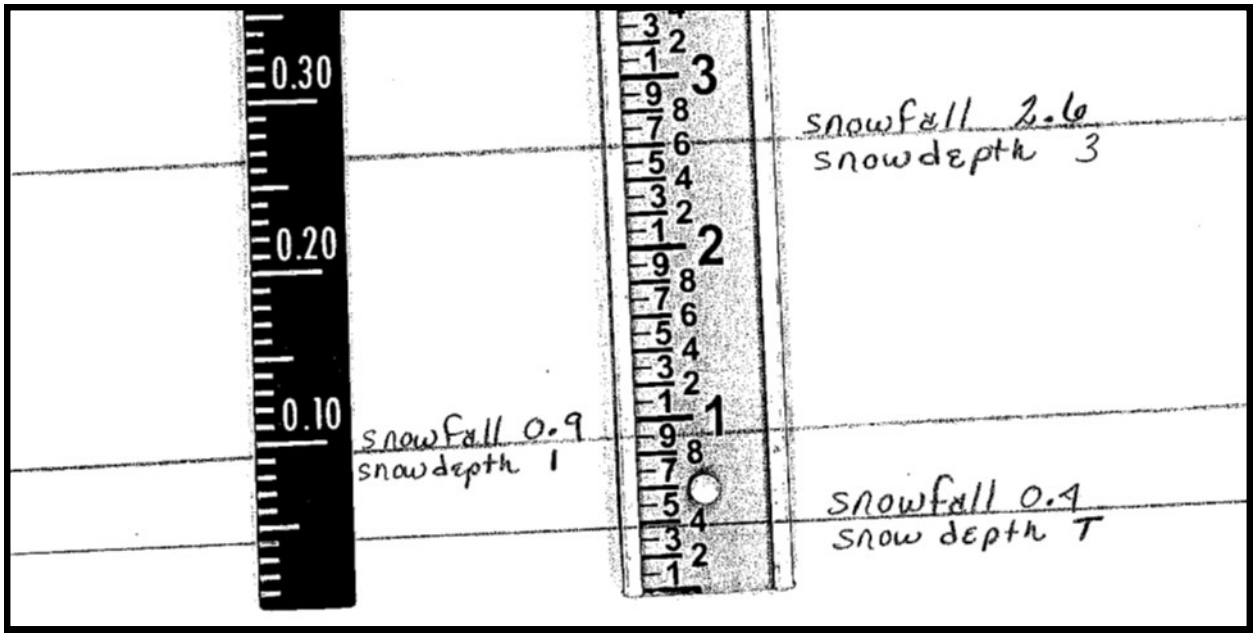
Curious about what time a cold front will be pushing through your location? This graph can show you the time and give you an idea of how strong the front is by how drastic of a change appears in elements including the temperature, dew point and wind fields. The stronger the front, the more drastic the change.

A recent addition in the past year or so are the Fire Weather elements. Folks doing prescribed burns can quickly check out this graph and determine whether or not it is a good day to perform their burn. Seeing the forecast through the day for things including winds, relative humidity and mixing height can make performing burns safer.



Notes From MoM (Mind of Marla) - *Marla Doxey, Data Acquisition Program Manager*

Another snow season is almost under our belts, however, we aren't out of the woods by any means. February and March can bring some pretty heavy snow storms. We did see a few snow showers in December which were really light and fluffy with very little water content. I have noticed a tendency of reporting 24 hour snow fall amounts in whole inches. For example, 3.0, 4.0, 1.0, etc. While this may happen on occasion, the majority of your new snowfall events should be more like 1.7, or 2.2, or 3.5 or something similar. Whether you use a snow stick or your black measuring stick, the measurement would be the same, as you can see here. This example is assuming you started with no snow on the ground prior to this snow event.



If you had existing snow cover, your snow depth could be higher than the values given here, but it should give you an idea of what I am talking about.

I have also seen occasions where observers want to use a 10:1 water ratio for every snowfall event. This indicates the snow in the can was not melted and the observer simply "guessed". While measuring snow will never be exact, you can come reasonably close. You will find the ratio is different for each snow event. We have actually had 30:1 ratios for very dry snow events and much lower ratios of 5:1 for wet snow events.

As the weather continues to warm and become more like spring, you can put the funnel and smaller tube back in your gauge. Just remember to take it back out should a late winter storm strike. Heavy snow will quickly plug the funnel and prevent it from falling inside the outer can.

Looking ahead to spring and summer...

Just a reminder that hail is not considered snow. You would just enter 0.0 in the snow fall column. However, it is considered snow depth (ice) if at observation time the ground still has close to 50% or more of the ground covered. Please enter the size of the hail and the time it occurred in Remarks. This is very beneficial. When referencing the size, please do not use marble or hen egg as both of these have several different sizes attributed to them. Coins are a good reference as a dime, quarter, half dollar, never change in size. Wind damage reports of broken tree limbs, shingles or siding off buildings, pivots overturned, etc, are also helpful. Remember, you are telling the weather story for the previous 24 hours for your area. If someone were to look back at your form 10 years from now, what would you like them to know about your weather? Anyone can now review your form for free on the NCDC website.

http://www.ncdc.noaa.gov/IPS/

Notes From MoM (Mind of Marla) Continued...

We are starting to schedule our annual visits. In order to be most efficient with our budget, there are times where we will combine trips with other outreach activities such as storm spotter talks. In that instance don't be surprised if we stop by in the late afternoon or early evening hours. We will call ahead to let you know that way you know to expect us and will also give you the opportunity to let us know what supplies you need and if anything is broken. Of course you are all invited to attend the Storm Spotter talks scheduled for your county.

Please continue to send emails to the group whenever you need help with something, have a question or need supplies, or when sending the file from the FPR-D recording rain gauge:

cr.coop-hastings@noaa.gov

There are times when I am not here and this way someone else can help you immediately.

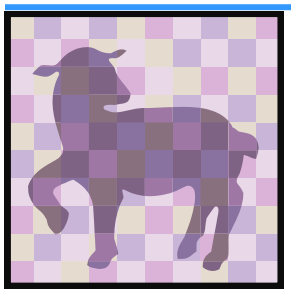
The price of stamps has gone up once again. Please do not throw out your envelopes just because the postage on them is incorrect. Continue to use them to mail in your forms. We are billed for the extra postage when it arrives here, so you don't need to put extra stamps on it either. Of course if you send your observations via WxCoder or IV-ROCS on a daily basis, you do not need to mail in your form.

Employee Spotlight - Mike Reed, Hydrometeorological Technician

My name is Mike Reed and I am a hydrometeorological technician (HMT) at the NWS Forecast Office in Hastings, NE. I am married to my wife and best friend Kim, and we will celebrate 25 years of marriage in July this year. We have 2 daughters who are both attending Hastings College, so since August we have been adjusting to an empty nest. Bethany is a junior, studying Elementary Education, Early Childhood Development, and Spanish. McKenna is a freshman and is studying Elementary Education, Special Education, and Spanish. Most people have never heard of the town I was born in, Yellville, Arkansas, but I promise it is on some maps. I spent a good portion of my youth in north central and southeast Arkansas, before moving to Nebraska to start the 7th grade. Never to forget my southern heritage, my family cheers for the Razorbacks (Woo Pig Sooie), as well as the Huskers (Go Big Red).

The path to my current position as an HMT has taken a few twists and turns along the way. I joined the Nebraska Army National Guard as a junior in high school, and served 14 years. My federal government career started in August 1986, as the Administrative NCO for a Nebraska Army National Guard unit, first in Hastings, then in Kearney, while serving on active duty with the Active Guard/Reserve. In January 1994, I switched to the civil servant side of the federal government, and served as the Operations Specialist and Ammunition Manager for the National Guard at the training site near Hastings. While serving there, I was notified of the administrative position opening at the National Weather Service office. I applied, and was fortunate to be selected, although I had to wait for a hiring freeze to lift before I could start. In September 1997, I started at the Hastings NWS office, and have worked here since. The HMT position came open in 2009, and I was able to transition from the administrative position onto the operations floor in October. It has been an educational and rewarding experience. I enjoy my colleagues and my work, which includes opportunities to work in the field occasionally. These trips give me a chance to meet the excellent people who volunteer to work as observers for the National Weather Service face to face. Their hard work and dedication to providing accurate data to our office is inspiring.

March, A Month of Transition - *Julia Berg, General Forecaster*

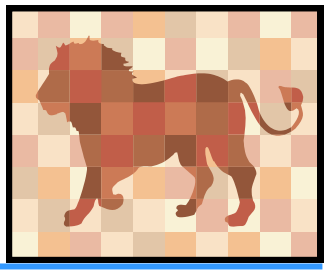


Lamb or lion, warm or cold, thunderstorms or snow storms. All of these things come to mind when people think of March on the plains. March brings the change of seasons from winter to spring, and during this transition a wide variety of weather is possible.

Heavy snow – March is typically one of the heaviest snow producers. In 2006, on the 20th through 21st, south central Nebraska had heavy snow, with Greeley having 30 inches, 21.6 inches was reported in Grand Island, 21.2 inches in Hastings and 16.7 inches in Kearney. Even north central Kansas had 6 to 10 inches of snow.

Severe weather – Thunderstorms start to return to the region during this time of the year. On March 13, 1990, a widespread outbreak of severe thunderstorms produced 59 tornadoes, 48 of which were in Nebraska, Kansas and Iowa. Some of these were the strongest tornadoes for so early in the season. The strongest of the tornadoes tore through Hesston, KS, killing two and injuring 60 others. A quarter mile wide, F4 tornado completely wiped out a farm house northeast of Red Cloud, NE.

Winds – March is typically thought of as a windy month. On March 30, 1999, winds behind a cold front brought winds of 54 to 58 mph to the area. A window was blown out of a store in Kearney, NE, as well as awnings torn off buildings in Kearney and York, NE.



Temperatures – Normal temperatures are on their way up from the beginning to the end of the month. High temperatures at the beginning of the month are only in the 40s while at the end of the month 50s are normal. Low temperatures are around 20 degrees early in the month while later, low temperatures can be around freezing.

Cooperative Observer Awards

25 Year Length of Service Award: Larry Gillett is the official NWS observer for Burr Oak, KS. He takes daily precipitation and temperature observations and reports each morning to the Hastings NWS office. Larry was presented with his 25 year length of service award November 20, 2013. Larry is affectionately known around our office as the "Human ASOS", since he will call in with current weather conditions when they happen - 24 hours a day, 7 days a week.

25 Year Length of Service Award: Charlotte Hanson is the official NWS observer for Jewell, KS. She takes daily precipitation observations and reports them to the Hastings NWS office. Charlotte was presented with her 25 year length of service award November 20, 2013.

35 Year Length of Service Award: Michael Overturf is the official NWS observer for Clay Center, NE, 6 miles east southeast to be exact. He takes daily precipitation observations and reports them to the Hastings NWS office. Mike was presented with his 35 year length of service award November 20, 2013.

The National Weather Service proudly presented Howard and Patricia Romsdal with the prestigious **Edward H. Stoll Award** on January 13th, 2014. This award is presented to volunteer Cooperative Weather Observers reaching 50 years of dedicated service. It was established in honor of Edward H Stoll, the cooperative observer at Elwood, Nebraska for 76 years (1905-1981). Since December 1st, 1963, Howard and Patricia have faithfully recorded the daily precipitation for the Bradshaw, Nebraska area.

Weather observations for the Bradshaw area date back to April 1st, 1898 when EC Roggy became the first observer to report precipitation for Bradshaw. Since December 1st, 1963, every day at 7 AM, Howard and Patricia have recorded how much precipitation fell in the previous 24 hours. This amounts to over 18,250 daily observations. Together they have measured a total of 1352.90 inches of liquid precipitation. If this all fell at once, it would submerge a ten story building! The wettest year in Bradshaw during their tenure was 1973, when 39.22 inches of liquid precipitation was recorded. The very next year was the driest year, 1974, when only 14.95 inches of liquid precipitation was recorded. For the entire period of record, 1899-2013, the most precipitation recorded in one year was 50.44 inches in 1905. The year 1934 was the driest with only 12.98 inches. The average precipitation for this entire period, 1899-2013 is 26.78 inches.

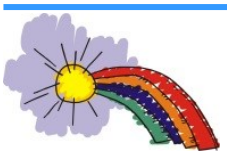
Kids Against Hunger - *Scott Bryant, Lead Forecaster*

Last September and October, the United States National Weather Service participated in a collective, agency-wide project designed for the purpose of giving back to our communities, this country, and the world. This project, known as The National Weather Service Week of Service, began three years ago with a very basic premise: by loving and caring for your neighbor you make your community and this world a better place. During the 3rd annual National Weather Service Week of Service, over 1200 National Weather Service employees from across the country donated their time and proudly participated in selfless activities, some of which included: holding food drives, donating school supplies, volunteering at food banks and donating blood.

Employees from the National Weather Service office in Hastings were also proud to participate in the 3rd annual National Weather Service Week of Service by volunteering with Kids Against Hunger – a humanitarian food-aid organization whose mission is to significantly reduce the number of hungry children in the U.S.A. and to feed starving children throughout the world. While volunteering with Kids Against Hunger, the National Weather Service office of Hastings packaged enough meals to feed 7500 starving children all over the world. The experience was truly rewarding and we look forward to giving back again this year during the 2014 National Weather Service Week of Service.

If you would like more information about Kids Against Hunger, please visit: **http://kidsagainsthunger.org/**

Frequently Asked Questions - *Shawn Rossi, Lead Forecaster*



Atmospheric Optics: Did you Know?

Atmospheric optics are a result of the unique properties of Earth's atmosphere. Blue skies on a sunny day, colorful sunsets and rainbows are all common phenomena related to the optics of Earth's atmosphere. Sundogs, light pillars, as well as halos around the sun or moon are also a result of atmospheric optics.

These phenomena tend to occur when light, usually from a natural source, is reflected or refracted by ice crystals in the Earth's atmosphere. In February, residents of south central Nebraska were treated to a pair of mornings demonstrating two of these phenomena. First, on the morning of February 3rd, a local resident snapped a picture of a sunrise in Grand Island, NE accompanied by a sun pillar. The light pillar looks like a thin column extending vertically above the rising sun and is most commonly observed when the sun is low in the horizon with ample ice crystals present. Then, on the morning of February 5th, residents of south central Nebraska were treated to a beautiful sundog around 8 AM. Sundogs are most commonly created by the refraction of light from hexagonal shaped ice crystals in high clouds, or during very cold weather. Not surprisingly, on the nearly clear morning of February 5th, 2014, the morning low temperature was -11°F, or about 30°F below normal for the date!

Picture of a sun pillar taken in Grand Island, NE on February 3rd, 2014. (Courtesy Tj Janulewicz)

Picture of sundogs taken in Hastings, NE on February 5th, 2014. (Courtesy NWS Hastings)

Severe Weather Awareness Week

Although it's been cold, spring and thus severe weather season will soon be upon us! Don't wait until the first thunderstorm develops to prepare for severe weather. Make sure you have a plan of action in case severe weather threatens your area. A perfect time to gear up for severe weather season is during Severe Weather Awareness Week, listed below for each state.

Kansas: March 3 - 7, 2014
Nebraska: March 24 - 28, 2014

For more information on Severe Weather Awareness you can refer to the following state packets:

Kansas: *http://www.crh.noaa.gov/images/gid/WCM/KS_SWAW2014.pdf*

Nebraska: *http://www.crh.noaa.gov/images/gid/WCM/SWAW2014.pdf* ***(available after March 1st)***

In preparation for severe weather awareness week, we thought we would remind you of some common terminology to remember during severe weather!

WATCH - Issued when conditions are favorable for the development of severe weather in and close to the watch area. The size of the watch can vary depending on the weather situation and is usually issued for a duration of 4 to 8 hours. During the watch, people should review severe weather safety rules and be prepared to move to a place of safety if threatening weather approaches.

WARNING - Issued when severe weather is detected by radar or reported by storm spotters. Information in this warning will include the location of the storm, what areas will be affected, and the primary threat associated with the storm. People in the affected area should seek safe shelter immediately. Remember that severe thunderstorms can produce tornadoes with little or no advance warning. Warnings can be issued without a watch already in effect.

Tips For Reporting Hail and Wind Speed

The National Weather Service will issue a Severe Thunderstorm Warning when hail is expected to be 1" (quarter size) or larger and/or when winds are expected to be 58 MPH or greater.

When reporting hail, it is best to measure the hail when safe to do so. If you are not equipped with a ruler or other measuring instrument, hail size can be related loosely to coins or athletic balls, as in the table below (right).

It's often difficult to estimate wind speed, especially in the plains where there are few physical indicators to observe damage. Below (left) is the Beaufort Wind Force Scale for estimating wind speeds. This is only a rough guide. Actual damage may occur at weaker or stronger speeds.

Wind Speed (mph)	Effects
25-31	Large branches in motion
32-38	Whole trees in motion
39-54	Twigs break off trees, wind impedes walking
55-72	Damage to TV antennas, large branches break off trees
73-112	Surfaces of roofs peeled off, windows broken, trailer homes overturned
113+	Roofs blown from houses, weak buildings and trailer homes destroyed, large trees uprooted, train cars blown off tracks

BB	Less than 1/4"
Pea	1/4"
Dime	7/10"
Penny	3/4"
Nickel	7/8"
Quarter	1"
Half Dollar	1¼"
Walnut or Ping-Pong Ball	1½"
Golf Ball	1¾"
Lime	2"
Tennis Ball	2½"
Baseball	2¾"
Large Apple	3"
Softball	4"
Grapefruit	4½"

Weather Crossword

Across

3. Issued when conditions are favorable for the development of severe weather in and close to the watch area.
8. A _____ is a strong low pressure system that forms over the tropics with an organized center known as an eye.
9. Water drops that fall to earth.
10. Issued when severe weather is detected by radar or reported by storm spotters.
12. A bright flash of light that occurs during a thunderstorm.
13. Tornadoes can result in significant amounts of _____.
14. Cloud Column of violently rotating air NOT in contact with the ground.

Down

1. The sound that lightning makes.
2. A _____ is a descending pocket of air from a thunderstorm which spreads out in all directions once at the ground, and is a well-known hazard for aircraft.
4. A violently rotating column of air with circulation reaching the ground.
5. The active season for severe weather.
6. A local storm easily recognized by its cumulonimbus cloud formation and accompanied by lightning and thunder.
7. Thunderstorms can often product damaging _____ gusts.
11. Never drive across a _____ road.

2014 Spring Severe Weather Awareness Presentations

All presentations begin at 6:30 p.m.

Date	County	City	Location
February 24	York	York, NE	Kilgore Memorial Library
February 24	Hamilton	Aurora, NE	Fire Station
February 25	Webster	Blue Hill, NE	Community Center
February 25	Adams	Hastings, NE	Lincoln Fire Station
February 26	Hall	Grand Island, NE	City Hall - Council Chambers
March 3	Rooks	Plainville, KS	Nazarene Church
March 3	Osborne	Osborne, KS	Public Library
March 4	Nuckolls	Nelson, NE	Community Center
March 4	Mitchell	Beloit, KS	NCK Technical College
March 5	Valley	Ord, NE	Fire Station
March 5	Phillips	Phillipsburg, KS	Fire Station
March 5	Jewell	Mankato, KS	Community Center
March 6	Smith	Smith Center, KS	Srader Center
March 10	Fillmore	Grafton, NE	Fire Station
March 10	Thayer	Hebron, NE	3rd Floor - Courthouse
March 11	Dawson	Overton, NE	Fire Station
March 17	Franklin	Hildreth, NE	Fire Station
March 18	Howard	Dannebrog, NE	Fire Station
March 19	Greeley	Greeley, NE	Courthouse

2014 Spring Severe Weather Awareness Presentations

All presentations begin at 6:30 p.m.

Date	County	City	Location
March 20	Nance	Genoa, NE	Fire Station
March 20	Merrick	TBD	TBD
March 24	Harlan	Alma, NE	Fire Station
March 24	Kearney	Axtell, NE	Fire Station
March 24	Sherman	Loup City, NE	Community Center
March 25	Furnas	Edison, NE	Community Center
March 25	Phelps	Loomis, NE	Community Center
March 26	Gosper	Elwood, NE	Fire Station
March 26	Clay	Clay Center, NE	Clay County Fairgrounds
March 27	Polk	Osceola, NE	Fire Station
March 29	Advanced Spotter Talk *(8:30 am to Noon)*	Osborne, KS	Sunflower Bank
April 2	Buffalo	Kearney, NE	Extension Building Buffalo County Fairgrounds
May 3	Advanced Spotter Talk *(8:30 am to Noon)*	Smith Center, KS	TBD

Tornado Safety Drill

Every year, each state conducts a statewide tornado safety drill. These drills are designed to imitate the event of a real tornado. Make sure that you have a plan and practice where you would go in the event of a tornado. The following tornado drills have been scheduled in Nebraska and Kansas.

Kansas: Tuesday, March 4th, 2014 at 1:30 pm CST.

Nebraska: Wednesday, March 26th, 2014 between 10 am and 11 am CDT.

This Table Reflects Various Historical Spring Extremes Across The Local Area...

	Hottest March Temperature On Record	Hottest April Temperature On Record	Hottest May Temperature On Record	Highest Calendar *Month* Snowfall (March-May)	Highest *Daily* Rainfall (March-May)
Grand Island	90° / 3-29-1986 and several others	98° / 4-20-1902	104° / 5-29-1934	23.5" / Mar. 1915	6.50" / 5-11-2005
Hastings	90° / 3-23-1910	96° / 4-23-1989	105° / 5-29-1934	21.2" / Mar. 2006	4.50" / 5-14-1905
Kearney	94° / 3-30-1943	100° / 4-28-1910	103° / 5-29-1934	29.0" / Mar. 1912	4.88" / 5-14-1905
Greeley	90° / 3-30-1968 and 3-22-1910	100° / 4-28-1910	101° / 5-24-1967	46.4" / Mar. 1912	5.08" / 5-10-1953
York	91° / 3-22-1910	97° / 4-15-2006	105° / 5-29-1934	21.5" / Mar. 1960	6.22" / 5-12-2005
Alton, KS	99° / 3-21-1907	106° / 4-23-1989	105° / 5-23-1939	25.5" / Mar. 1958	6.15" / 5-22-1961
Smith Center, KS	91° / 3-31-1978 and 3-11-1972	102° / 4-22-1989	105° / 5-29-1913	22.0" / Mar. 1958	4.60" / 5-23-1923

Spring Climate Outlook Detailed Below...

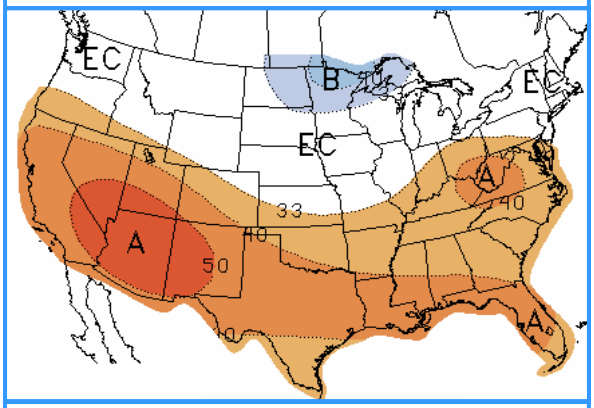
The latest Spring Outlook from the Climate Prediction Center continues the recent trend of forecasting **equal chances** of above normal, below normal, or near normal temperatures and precipitation across South Central Nebraska and North Central Kansas.

Time Frame: The NWS considers the "spring" season to be all of March, April and May. Although this differs somewhat from the astronomical spring season that runs from March 20-June 20, using these three full months is convenient for calculating meteorological data.

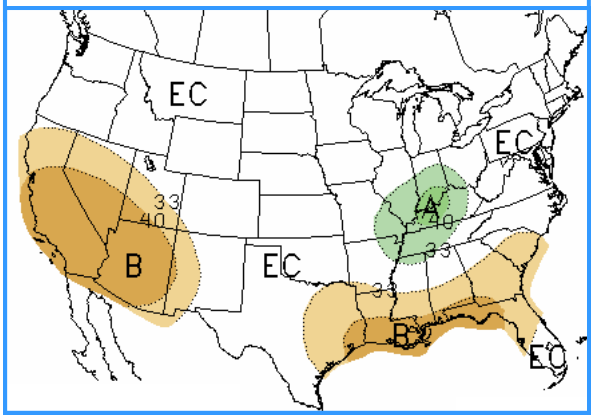
Temperature: The outlook on the right reflects a forecast for the *3-month period as a whole*. We tend to view temperatures in the context of a daily or monthly average, but the 3-month outlook accounts for the entire season. **Red/orange** colors represent "**warmer**" than normal and **Blue** colors represent "**cooler**" than normal. The white area labeled "Equal Chances" designates regions with equal chances of having above, near or below normal temperatures. This means there is no clear trend in the forecast analysis to support one of these outcomes over another. As the image shows, the local area is *entirely* in the "equal chances" portion of the outlook. As a result, there is currently not a strong enough indicator in long-range forecasts to justify either above or below normal temperature expectations.

Precipitation: Similar to temperatures, the precipitation outlook depicts the total precipitation trend for the entire 3-month period, and is independent of individual days or months. **Green** colors represent "**wetter**" than normal and **Orange/brown** colors represent "**drier**" than normal. The white area labeled "Equal Chances" designates regions with equal chances of having above, near or below normal precipitation. As depicted, the local area is in the same boat regarding the spring precipitation outlook as it is for the temperature outlook. This means there is no clear trend in the forecast analysis to support one of these outcomes over another.

Temperature Outlook for Spring 2014 (March - May)



Precipitation Outlook for Spring 2014 (March - May)



To view these and other Climate Prediction Center outlooks visit ***http://www.cpc.ncep.noaa.gov/***

National Weather Service

Weather Forecast Office
6365 Osborne Drive West
Hastings, NE 68901

Phone: 402-462-2127
Website: www.weather.gov/hastings
E-mail: w-gid.webmaster@noaa.gov
Facebook: US National Weather Service Hastings
Twitter: @NWS Hastings

Meet the Rest of the Staff at WFO Hastings

Meteorologist-In-Charge

Steve Eddy

Warning Coordination Meteorologist

Mike Moritz

Science and Operations Officer

Rick Ewald

Data Acquisition Program Manager

Marla Doxey

Electronic Systems Analyst

Mark Fairchild

Information Technology Officer

Carol Cartier

Administrative Assistant

Victor Schoenhals

Electronics Technician

Mike Bergmann

Meteorological Intern / Hydrometeorological Technicians

Briona Saltzman ● Joe Guerrero / Mike Reed ● Phil Beda

Lead Forecasters

Merl Heinlein ● Jeremy Wesely ● Cindy Fay

Shawn Rossi ● Scott Bryant

General Forecasters

Julia Berg ● Angela Oder

Ryan Pfannkuch ● Jeff Halblaub